

ABSTRACT

Digital data is rapidly embedded in color/grayscale digital data by switching between a set of multi-level screens or quantizers. Each screen can be tuned to maximize the quality of the digital data product on the intended display medium, so that the quality of the displayed product does not suffer. The data embedding method/algorithm of the invention generally involves generating a set of multi-level screens, each of which is generated by selecting a set of colors that comprise the colors that can be output by that multi-level screen; screening the input digital medium with the generated multi-level screens using a dither matrix and a set of level matrices; and selecting, for each of select number of pixel locations in the input digital medium, one of the level matrices, based on a message symbol to be embedded at that pixel location, to create an output.